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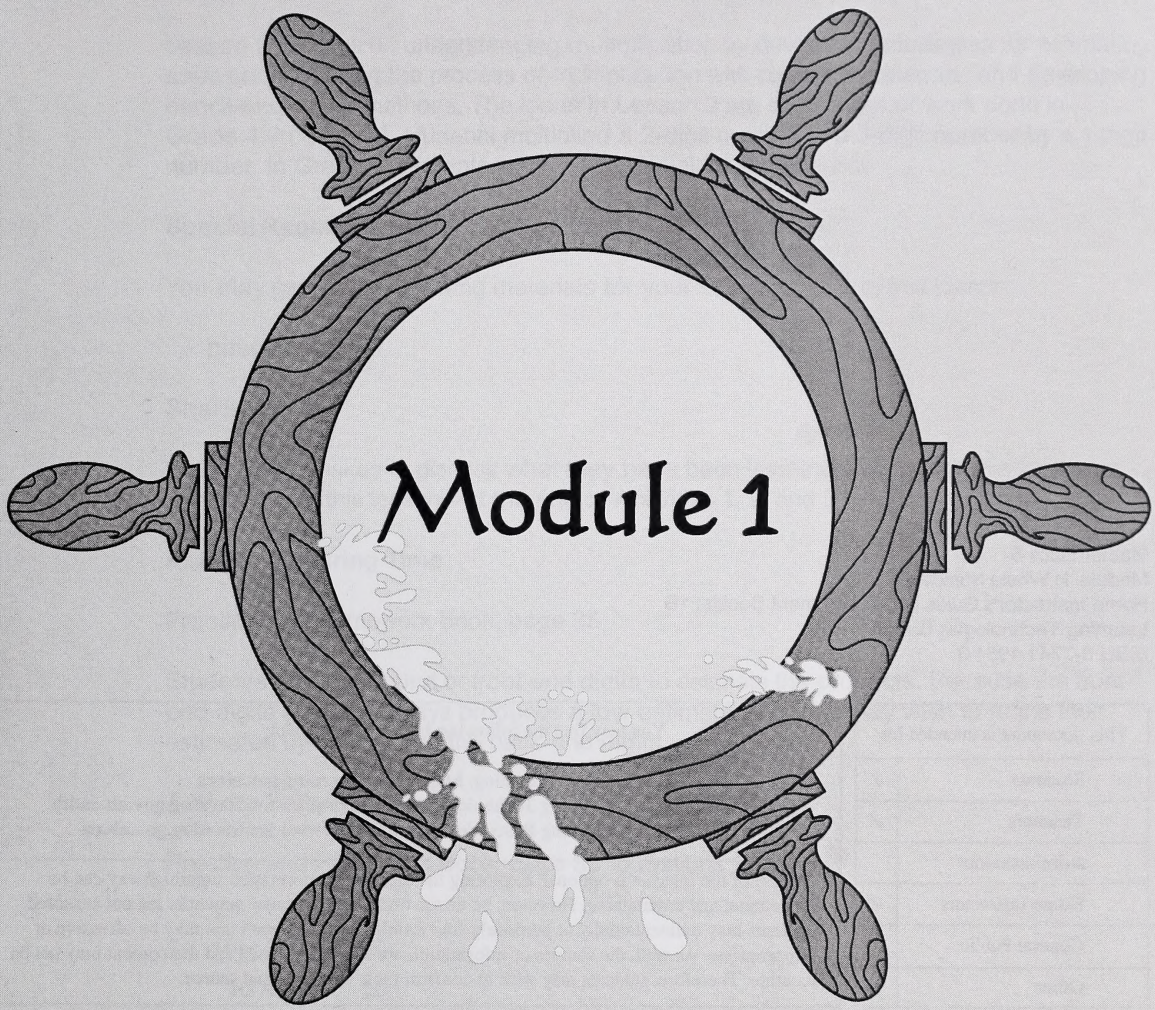
Mathematics 5



Home Instructor's Guide and Assignment Booklet 1B

Learning Technologies Branch

Alberta LEARNING

Mathematics 5
Module 1: Whole Numbers
Home Instructor's Guide and Assignment Booklet 1B
Learning Technologies Branch
ISBN 0-7741-1954-3

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

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- Alberta Learning, **http://www.learning.gov.ab.ca**
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Lesson 3: Multiplication

Overview

Lesson 3 focuses on understanding multiplication by developing strategies for estimating answers, modelling the process of multiplication with concrete materials, and developing pencil-and-paper methods. The ideas in Lesson 3 are extensions of work done in Grade 4. In Grade 4, students multiplied a 2-digit number or a 3-digit number by a 1-digit number. In Grade 5, students work with a 2-digit multiplier.

Special Requirements

You may gather the following materials for your student to use in this lesson:

- base ten blocks

Sharing Time

Students are asked to discuss what they have been learning with their home instructor three times in this lesson—at the end of Activities 1, 2, and 3.

Activity 1 Sharing Time

Practice and Homework Book, page 35

Students may use round or front-end digits to estimate the products. Because the front-end digits strategy always produces a low estimate, students may wish to refine their estimates by considering the back-end digits.

Activity 2 Sharing Time

Practice and Homework Book, page 33, questions 1 to 3

1.
$$\begin{aligned} 10 \times 20 &= 200 \\ 10 \times 6 &= 60 \\ 2 \times 20 &= 40 \\ 2 \times 6 &= 12 \\ &\overline{\quad 312} \end{aligned}$$

2.
$$\begin{aligned} 20 \times 20 &= 400 \\ 20 \times 9 &= 180 \\ 3 \times 20 &= 60 \\ 3 \times 9 &= 27 \\ &\overline{\quad 667} \end{aligned}$$

3.

$20 \times 30 = 600$
$20 \times 5 = 100$
$6 \times 30 = 180$
$6 \times 5 = 30$
910

Activity 3 Sharing Time

Practice and Homework Book, page 38, questions 1 to 3

Note: This course links paper-and-pencil methods for multiplying with the base ten models. This is done to promote a clearer understanding of multiplication. You may have been taught the traditional method of multiplying. Share your method with your student and compare his or her procedures with yours. The steps for the traditional method are shown in question 3 as a sample.

1.

$10 \times 20 = 200$
$10 \times 4 = 40$
$6 \times 20 = 120$
$6 \times 4 = 24$
384

or

$6 \times 24 = 144$
$10 \times 24 = 240$
384

2.

$20 \times 70 = 1400$
$20 \times 8 = 160$
$1 \times 70 = 70$
$1 \times 8 = 8$
1638

or

$1 \times 78 = 78$
$20 \times 78 = 1560$
1638

3.

$2 \times 400 = 800$
$2 \times 70 = 140$
$2 \times 2 = 4$
944

or

944

Traditional Method

Step 1:
$$\begin{array}{r} 4\,7\,\boxed{2} \\ \times\quad \boxed{2} \\ \hline 4 \end{array}$$

Think $2 \times 2 = 4$.
Write 4 in ones column.

Step 2:
$$\begin{array}{r} {\scriptstyle 1} \\ 4\,\boxed{7}\,2 \\ \times\quad \boxed{2} \\ \hline 4\,4 \end{array}$$

Think $2 \times 7 = 14$.
Write 4 in tens column and 1 above the 4 in hundreds column.

Step 3:
$$\begin{array}{r} {\scriptstyle 1} \\ \boxed{4}\,7\,2 \\ \times\quad \boxed{2} \\ \hline 9\,4\,4 \end{array}$$

Think $2 \times 4 = 8,\ 8 + 1 = 9$.
Write 9 in hundreds column.

Practice and Homework Book, page 39, questions 1 to 3
Note: The steps for the traditional method are shown in question 1 as a sample.

1.
$$\begin{array}{rr} & 83 \\ & \times\ 47 \\ \hline 40 \times 80 = & 3200 \\ 40 \times 3 = & 120 \\ 7 \times 80 = & 560 \\ 7 \times 3 = & 21 \\ \hline & 3901 \end{array}$$

or

$$\begin{array}{rr} & 83 \\ & \times\ 47 \\ \hline 7 \times 83 = & 581 \\ 40 \times 83 = & 3320 \\ \hline & 3901 \end{array}$$

Step 1:

$$\begin{array}{r} {\scriptstyle 2}\\ 83\\ \times\ 47\\ \hline 1 \end{array}$$

Think $7 \times 3 = 21$.
Write 1 in ones column and 2 above the 8 in tens column.

Step 2:

$$\begin{array}{r} {\scriptstyle 2}\\ 83\\ \times\ 47\\ \hline 581 \end{array}$$

Think $7 \times 8 = 56$, $56 + 2 = 58$.
Write 8 in tens column and 5 in hundreds column.

Step 3:

$$\begin{array}{r} 83\\ \times\ 47\\ \hline 581\\ 0 \end{array}$$

Erase the 2 above the 8 in tens column.Think 4 is in the tens place, so its really 40. Write 0 in the ones place as a place holder.

Step 4:

$$\begin{array}{r} {\scriptstyle 1}\\ 83\\ \times\ 47\\ \hline 581\\ 20 \end{array}$$

Think $4 \times 3 = 12$.
Write 2 in the tens column and 1 above the hundreds column.

Step 5:

$$\begin{array}{r} {\scriptstyle 1}\\ 83\\ \times\ 47\\ \hline 581\\ 3320 \end{array}$$

Think $4 \times 8 = 32$, $32 + 1 = 33$. Write 2 in the tens column, 3 in the hundreds column, and 3 in thousands column.

Step 6:

$$\begin{array}{r} {\scriptstyle 1}\\ 83\\ \times\ 47\\ \hline 581\\ 3320\\ \hline 3901 \end{array}$$

Add 581 and 3320. Work from right to left.

Note: You may wish to point out to your student that your method is simply a short-cut version of his or her method.

You probably used more mental math to find the partial products. Your student likely visualized the base ten blocks or a diagram to find the partial products. You both paid attention to place value when writing and adding the partial products.

2.

	53			53
	× 18			× 18
10 × 50 =	500	or	8 × 53 =	424
10 × 3 =	30		10 × 53 =	530
8 × 50 =	400			954
8 × 3 =	24			
	954			

3.

	572	or	572
	× 9		× 9
9 × 500 =	4500		5148
9 × 70 =	630		
9 × 2 =	18		
	5148		

Just the Facts, Please!

Students are asked to review the basic division facts before beginning Lesson 4: Division. Just the Facts, Please! gives a helpful tip on reviewing division facts.

The following Internet site has games that students can play to practise the multiplication and division facts:

http://www.quia.com/dir/math

If your student is having difficulty remembering the basic facts, you may wish to review the facts on a regular basis. You may find pages 128 to 133 of the Practice and Homework Book useful.

Lesson 4: Division

Overview

Lesson 4 focuses on understanding division by developing strategies for estimating answers, modelling the process of division with concrete materials, and developing pencil-and-paper methods.

Special Requirements

You may gather the following materials with your student for use in this lesson:

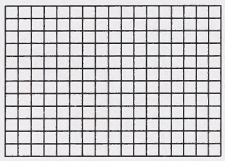
- base ten blocks
- calculator

Sharing Time

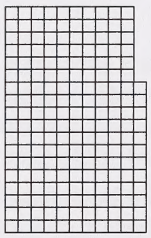
Students are asked to discuss what they are learning with their home instructor twice in Section 4—at the end of Activity 1 and at the end of Activity 2.

Activity 1 Sharing Time

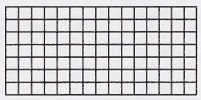
Practice and Homework Book, page 37, questions 1 to 4

1. 

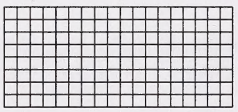
204 chairs are in 12 rows. How many chairs in each row? 20
$204 \div 12 = 20$

2. 

192 chairs are in 18 rows. How many chairs in each row? 10
$192 \div 18 = 10$ R12

3. 

105 chairs are in rows of 15. How many rows are there? 7
$105 \div 15 = 7$

4. 

136 chairs are in rows of 17. How many rows are there? 8
$136 \div 17 = 8$

Activity 2 Sharing Time

Practice and Homework Book, page 39, questions 4 to 6

4.

$$\begin{array}{r} 5 \\ 10 \\ 6\overline{)95} \\ \underline{60} \\ 35 \\ \underline{30} \\ 5 \end{array} \quad 15 \text{ R}5$$

or

$$\begin{array}{r} 15 \text{ R}5 \\ 6\overline{)95} \\ \underline{6\downarrow} \\ 35 \\ \underline{30} \\ 5 \end{array}$$

5.

```
      4 > 54                          54
     50                              ----
8 ) 432          or          8 ) 432
    400                          40
    ---                          --
     32                          32
     32                          32
     --                          --
      0                           0
```

6.

```
      2
     50 > 152 R3                          152 R3
    100                                   -------
5 ) 763                    or         5 ) 763
    500                                    5
    ---                                    -
    263                                    26
    250                                    25
    ---                                    --
     13                                    13
     10                                    10
     --                                    --
      3                                     3
```

Module Summary

In the Module Summary students are asked to complete the Numbers in the News Project and send the completed project with Assignment Booklet 1B to the teacher.

Following the Module Summary are Keystrokes and Review. These special activities can be assigned at a later time to review the module ideas and prepare for the final test.

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ASSIGNMENT BOOKLET 1B

Mathematics 5

Module 1: Lesson 3 Assignment, Lesson 4 Assignment, and Numbers in the News

Home Instructor's and Student's Comments:

STUDENT FILE NUMBER
(if label is missing or incorrect)

_____

Date Submitted:

_____

Apply Module Label Here

Name

Address

Postal Code

Please verify that preprinted label is for correct course and module.

FOR SCHOOL USE ONLY

Assigned Teacher:

_____

Date Assignment Received:

_____

Grading:

_____

Teacher's Comments

_____

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

INSTRUCTIONS FOR SENDING IN THIS DISTANCE LEARNING ASSIGNMENT BOOKLET

When you register for distance learning courses, you are expected to send in Assignment Booklets for corrections regularly. Try to send each Assignment Booklet as soon as you have completed it. Before sending your Assignment Booklet, please check the following:

- Are all the assignments completed? If not, explain why.
- Has your work been reread to be sure the spelling and details are correct?
- Is the record form filled out and the correct module label attached?

MAILING

1. Postage Regulations

Do **not** enclose letters with Assignment Booklets.

Send all letters in a separate envelope.

2. Postage Rates

Take your Assignment Booklet to the post office and have it weighed. Attach enough postage and seal the envelope. Assignment Booklets will travel faster if correct postage is used and if they are in large envelopes that are no more than two centimetres thick.

FAXING

1. Assignment Booklets may be faxed. Contact your teacher for the fax number.

2. All faxing costs are the responsibility of the sender.

E-MAILING

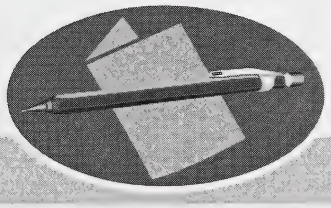
Assignment Booklets may be e-mailed. Contact your teacher for the e-mail address.

Mathematics 5

Module 1

Whole Numbers

Assignment Booklet 1B



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Summary

	Total Possible Marks	Your Mark
Lesson 3 Assignment	20	
Lesson 4 Assignment	30	
Numbers in the News	10	
	60	

Teacher's Comments

Mathematics 5
Module 1: Whole Numbers
Assignment Booklet 1B
Lesson 3 Assignment, Lesson 4 Assignment, and Numbers in the News
Learning Technologies Branch

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ASSIGNMENT BOOKLET 1B
MATHEMATICS 5—MODULE 1: WHOLE NUMBERS

Your mark on this module will be determined by how well you do your assignments in the Assignment Booklets.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate lessons.

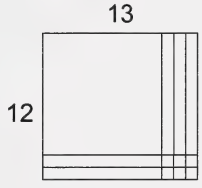
There are two lesson assignments and a Numbers in the News project in this Assignment Booklet. The total value of the lesson assignments is 50 marks. The Numbers in the News projects is worth 10 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

Lesson 3 Assignment: Multiplication

(20)

1. Connor and Kassidy built the array for 12×13 shown below.



They recorded their thinking differently.

Connor		Kassidy	
$10 \times 13 =$	130	$12 \times 10 =$	120
$2 \times 13 =$	26	$12 \times 3 =$	36
	156		156

(1) **a.** Explain Connor's reasoning.

_____

_____

_____

(1) **b.** Explain Kassidy's reasoning.

(3) **c.** Build a model of 24×21. Then draw a sketch of the model.

Explain how the model can be used to multiply 24×21.

2. Takashi says he sometimes thinks of money when he needs to compute mentally. For each of the following questions, give the answer and explain how Takashi might have thought about it as money.

(1) **a.** $24 \times 5 =$ _____

(1) **b.** $24 \times 25 =$ _____

(1) **c.** $24 \times 50 =$ _____

3. Turn to page 74 in your textbook. Do question 3 of On Your Own. For each question, estimate the answer (show what you did) and show how to do the multiplication two different ways.

On Your Own, question 3.a.: 36×58

(1) Estimate the answer. (Show what you did.)

(2) Method 1:

(2) Method 2:

On Your Own, question 3.b.: 452×26

(1) Estimate the answer. (Show what you did.)

(2) Method 1:

(2) Method 2:

(2) **4.** When multiplying two large numbers, which paper-and-pencil method do you prefer using? Explain.

_____

_____

_____

_____

30

Lesson 4 Assignment: Division

1. Turn to page 78 of your textbook. The picture at the top of the page shows a young cabin boy helping to record his ship's supplies. Do questions 2 and 3 of Explaining Multiplication and Division. For each question, write a story problem that might be solved by doing that calculation, estimate the answer, do the calculation using a paper-and pencil method, and answer the question.

Explaining Multiplication and Division, question 2

(2) **a.** Story Problem

(2) **b.** Estimate (Show what you did.)

(2) **c.** Calculation (Show your work.)

(2) **d.** Answer

Explaining Multiplication and Division, question 3

(2) **a.** Story Problem

_____

_____

_____

_____

_____

(2) **b.** Estimate (Show what you did.)

(2) **c.** Calculation (Show your work.)

(2) **d.** Answer

_____

_____

2. Turn to page 69 of your textbook. Do questions 1, 2, 5, and 7 of Practise Your Skills. For each question, estimate the answer, find the exact answer, and then show how you can check your answer with the opposite operation.

Practise Your Skills, question 1

(1) **a.** Estimate (Show what you did.)

(1) **b.** Exact Answer (Show your work.)

(1) **c.** Check your answer with the opposite operation. (Show your work.)

Practise Your Skills, question 2

(1) **a.** Estimate (Show what you did.)

(1) **b.** Exact Answer (Show your work.)

(1) **c.** Check your answer with the opposite operation. (Show your work.)

Practise Your Skills, question 5

(1) **a.** Estimate (Show what you did.)

(1) **b.** Exact answer (Show your work.)

(1) **c.** Check your answer with the opposite operation. (Show your work.)

Practise Your Skills, question 7

(1) **a.** Estimate (Show what you did.)

(1) **b.** Exact Answer (Show your work.)

(1) **c.** Check your answer with the opposite operation. (Show your work.)

3. Turn to page 79 of your textbook. Do questions 4.b. and 4.d. of On Your Own.

(1) **4. b.** _____

(1) **d.** _____

(10) **Numbers in the News**

Go through the scavenger hunt list for Module 1 to make sure you have clipped at least one sample for each question. Ask your home instructor to check the samples you found. Choose the samples you wish to use, and label each one with the scavenger hunt number it matches. Organize your samples and put them together with any other information required. Submit your project with this Assignment Booklet.

Ask yourself the following questions:

- Is my Numbers in the News project complete? (Have I included all my samples?)
- Do my samples show the ideas clearly? (Are my examples appropriate?)
- Did I take care to be neat when organizing and labelling my work?

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